

The Pan-Pacific Entomologist

Vol. XXXV

July, 1959

No. 3

PRESENT STATUS OF THE TRIBE MAYETINI IN THE UNITED STATES

Part I (Excluding California)

(Coleoptera: Pselaphidae)

ROBERT O. SCHUSTER¹, GORDON A. MARSH² AND ORLANDO PARK³

INTRODUCTION

The tribe Mayetini was transferred by Park (1947) from the family Staphylinidae to the family Pselaphidae. The genus *Mayetia* was included in keys to the North American Pselaphidae in 1951 and 1953 based on undescribed material (Park 1951, 1953). In 1955, Jeannel and Coiffait published a paper placing the tribe Mayetini in the subfamily Faroninae of the Pselaphidae and Coiffait (1955) revised the European species of *Mayetia*. The revision and one subsequent paper by Coiffait considered a total of 38 species of *Mayetia* occurring in countries bordering the Mediterranean Sea.

Prior to any of the above mentioned papers, Dr. Robert Bowman defined a species, "*Mayetia chapini*", in the appendix of a manuscript entitled "Classification of Coleoptera". About 20 manuscript copies of this work were given on request to coleopterists. Although the work was never published, the "type series" was deposited in the USNM. The unpublished work of Bowman was not sufficient to consider "*M. chapini*" as a valid species and his material, with his consent, is reconsidered in this paper.

Specimens of *Mayetia* collected in the United States date back to 1935. Until 1957, less than 100 specimens were available for study. Although *Mayetia* are not common in collections, they occur in moderate numbers at some localities and may be equally abundant in other areas where they are to be found. On the basis of the few collections thus far examined, it seems reasonable to predict that in due time the species of North American *Mayetia* as well as the number of specimens available for study should be augmented greatly.

Adults are represented for all the seasons by composite

¹Department of Entomology, University of California, Davis.

²Department of Entomology, University of California, Berkeley.

³Department of Biology, Northwestern University.

collections from various sections of the United States. Nothing is known of the larval forms or of the habits of the adults.

Specimens of *Mayetia* have been recovered from such diverse habitats as prairie soil, pine or oak situations, sphagnum moss, and peach orchards. An attempt to correlate the distribution of *Mayetia* with vegetation or soil types would be premature at this time although most of the collection records point to their preference for sandy soils. A possible historical factor influencing the distribution of *Mayetia* in the eastern United States may have been the Wisconsin Glaciation. Further collection is needed to substantiate the proposition that *Mayetia* occur only south of periphery of that ice sheet.

COLLECTION AND PREPARATION

A suitable method of collection and preservation is given below in hopes that our experience may prove helpful and increase interest in collecting these soil-inhabiting insects.

Mineral soil immediately below any organic debris was collected in the field, placed in multi-layered paper sacks and later processed into 95% ethanol by modified Berlese funnel in the laboratory. Due to the small particle size of the soil, the combination of a mesh of window screen and a grid (Newell, 1955) proved insufficient to maintain debris-free samples. The addition of a single layer of cheese cloth placed on the screen eliminated most of the sand without impeding the recovery of *Mayetia*. A volume of soil 4 inches deep and 16 inches square was processed from 8 to 12 hours using a 100 watt light bulb as the heat source. Specimens of *Mayetia* were recovered from the sample bottles by pouring the contents into petri dishes and examining under a dissecting microscope.

The specimens clear easily in a warm solution of 1 part super-saturated Merk phenol and 3 parts 85% lactic acid. The majority of our specimens have been mounted in Hoyer's medium after removal of the lactophenol by placing the beetles for a time in water. Specimens may be dehydrated and mounted in diaphane or Canada balsam but caution must be exercised or distortion of the extremities may result.

Stender dishes provide adequate containers for the solutions in which specimens are processed. An insect pin with the end flattened at a 60 degree angle to the shaft makes an excellent scoop for handling these small beetles.

One method for removing the genital structure is preferred. The cleared specimen is placed on a slide in a drop of Hoyer's. Either substaged lighting or a white-surfaced stage with adequate top lighting and a magnification of about 60X is required. Two sharp minuten pins in handles are used to open the ultimate segment and remove the genital structure. This is then transferred to a drop of Hoyer's on a clean slide, the genital segments removed and 15 mm. round cover slip applied. Slight pressure at this time will position the aedeagus as desired. The remainder of the insect is mounted on the same slide obviating any chance of losing either part.

TAXONOMY

European species of *Mayetia* in the Bernhauer Collection at the Chicago Natural History Museum were compared with our American species and found to be congeneric. The type of the genus, *Mayetia sphaerifera* Mulsant and Ray is in closest agreement with species occurring in the eastern part of the United States, and all of our species fall within the range of variability occurring in European species.

Some of the characters that help to separate the American species are variable within certain populations and must therefore be used with caution. Others, usually degrees of development of a structure, will adequately separate species.

The presence and degree of foveation, while extensively used in the discrimination of pselaphid genera, varies in *Mayetia*. Foveae are more pronounced in eastern populations, but elytral foveae are frequently developed only on one elytron of a given individual and are occasionally completely absent.

The most reliable characters of the head appear to be the maxillary palpi and the mentum. When gross sense organs are present on the maxillary palpi, segment 3 bears a large lateral development and segment 4 bears a similar development on the basal-lateral margin. Two, or occasionally three, sensory setae of various configuration occur on the anterior-lateral margin of the fourth segment as well as a terminal palpal cone (fifth segment of some European authors). The sensory areas of the palpi are reduced in one eastern species and are absent in those from California which are to be considered in a later paper.

In all species 2 setae arise from the mentum. In only a few

species large integumental projections arise anterior to those setae. One or two large circular markings occur on the head capsule just behind the mentum, depending on the species. One or two setae occur laterad of these markings, posterior to the basal-lateral angle of the mentum. These setae vary within species population. The left mandibular ramus of all eastern species bears a triangular tooth, the right an "M"-shaped tooth. Some emphasis is placed on the front margin of the labrum in separating European species, and this structure is of slightly different shape in American species. It is sexually dimorphic but other characters more easily separate the sexes. Due to an apparent change in shape of the labrum when the angle of observation is changed, and to an actual diversity of form displayed by specimens of a given species, this labral character is not exploited in this paper.

Besides the characters of the head, the meso- or more usually the metatrochanters are quite distinctive. These trochanter modifications may be present in both sexes, restricted to the males, or lacking in both sexes.

The length and width of the sixth tergite and sternite of the female is of some taxonomic value but many species will share the same measurements. The ultimate sternite of the male is medianly emarginate but the shape of this notch is of limited value because of the similarity between most species.

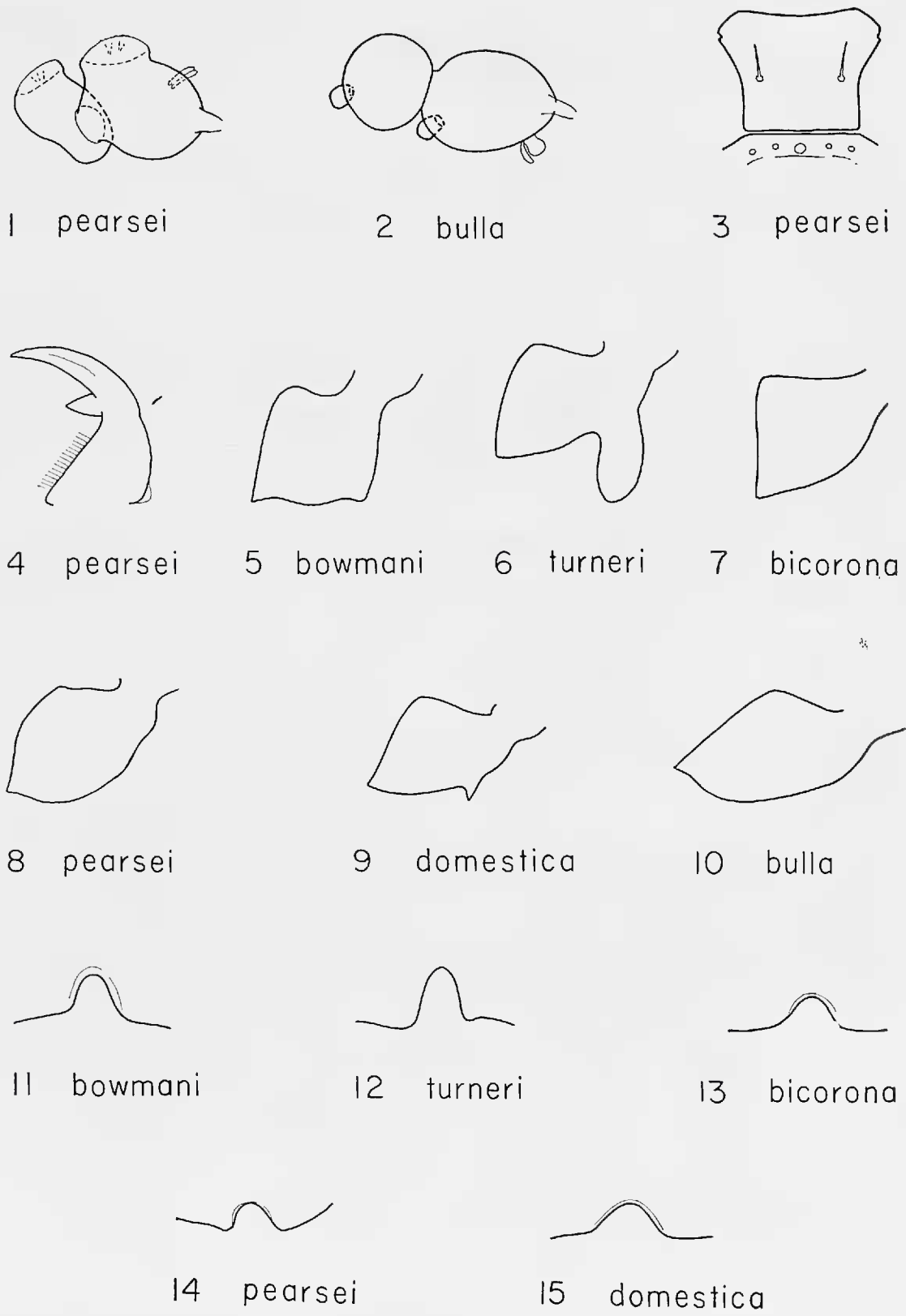
As more species are described, the male aedeagus probably will become the main structure for species determination. In resulting species groups the females may be inseparable.

Mayetia bowmani Schuster, Marsh, and Park, new species

(Figs. 5, 11, 16)

Male.—Head 0.11 mm. long \times 0.12 mm. wide; pronotum 0.12 mm \times 0.11 mm.; elytra 0.11 mm. \times 0.12 mm. total length 0.97 mm. Elongate depressed; pale testaceous; impunctate; body pubescence monaxial, straight, suberect. Head lacking eyes; tempora sharply rounded at neck; 2 small vertexal foveae at middle, separated by the distance between fovea and lateral margin; feeble sulci extend forward from each vertexal fovea; frontal margin sinuate between antennal acetabulae; clypeus short, transverse; labrum tridentate on each side of excavate middle; mandibles arcuate; inner ramus of right mandible with symmetrical "M"-shaped tooth; tooth of left ramus triangular; ventral surface of head with small centrally located gular fovea; mentum with a pair of setae; a circular mark occurs on the head capsule with a pair of setae behind each basal-lateral angle of the mentum. Maxillary palpus with large annular sensory areas

on segments III and IV; segment IV with 3 small sensory setae on lateral surface. Antenna of 11 segments; I twice as long as II, narrowed basally; III, IV, VI, and VIII narrower than V and VII; IX through XI forming



EXPLANATION OF PLATE 1

Figs. 1,2. Segments III and IV of maxillary palpi; fig.3. Mentum and front margin of head capsule; fig. 4. Left mandible; figs. 5-10. Male metatrochanters; figs. 11-15. Emarginations of male sixth sternites.

club with X and XI connate; X cup shaped with 4 macrosetae; XI with 7 long, lamellate setae spaced equidistally around base. Pronotum longer than wide, widest near apical third. Apterous. Elytron lacks basal and subhumeral fovea; definite fovea present at beginning of sutural stria; humeral angles rounded; lateral margins weakly expanded. Abdomen of 6 visible tergites: I through V similar in shape; V and VI not separated by areolate membrane; II through V with fovea at each basal-lateral angle, foveae transversely connected by pubescent sulci; VI rounded distally with marginal spiracles at the anterior fourth; six visible sternites; I with wide coxal lines; II through V alike and similar to the tergites; VI with a median emargination; the apices of a paired segment are external, sclerotized and terminal. Prosternum long, integument smooth before coxae, reticulate laterally; mesosternum reticulate; meso- and metacoxae contiguous; each tibia with 1 macroseta midway on anterior surface and definite combs of setae occur at the apex; mesotrochanters with a slight inner-posterior angle; metatrochanters relatively square (Fig. 5), the posterior edge being developed with 1 or 2 tubercles at the angle, the inner tubercle bearing a seta; tarsi of 2 segments ending in a single strong claw. Sixth sternite is approximately 0.059 mm. long, the rather widely sinuate notch (Fig. 11) being just less than $1/3$ this length. Aedeagus 0.092 mm. long \times 0.047 mm. wide (Fig. 16).

Female.—As in the male except for the termination of the sixth sternite which lacks emargination.

This species is known from 8 males and 9 females from ANDROPOGON BALD, SHUT-IN-RIDGE, BENT CREEK EXP. FOREST, BUNCOMBE COUNTY, NORTH CAROLINA by A. P. Jacot #34f34. The holotype (USNM 64116) is deposited in the USNM, paratypes in the USNM, and in the collections of Orlando Park and R. O. Schuster.

This species may be recognized by the metatrochanters which are modified in both sexes.

Mayetia turneri Schuster, Marsh, and Park, new species

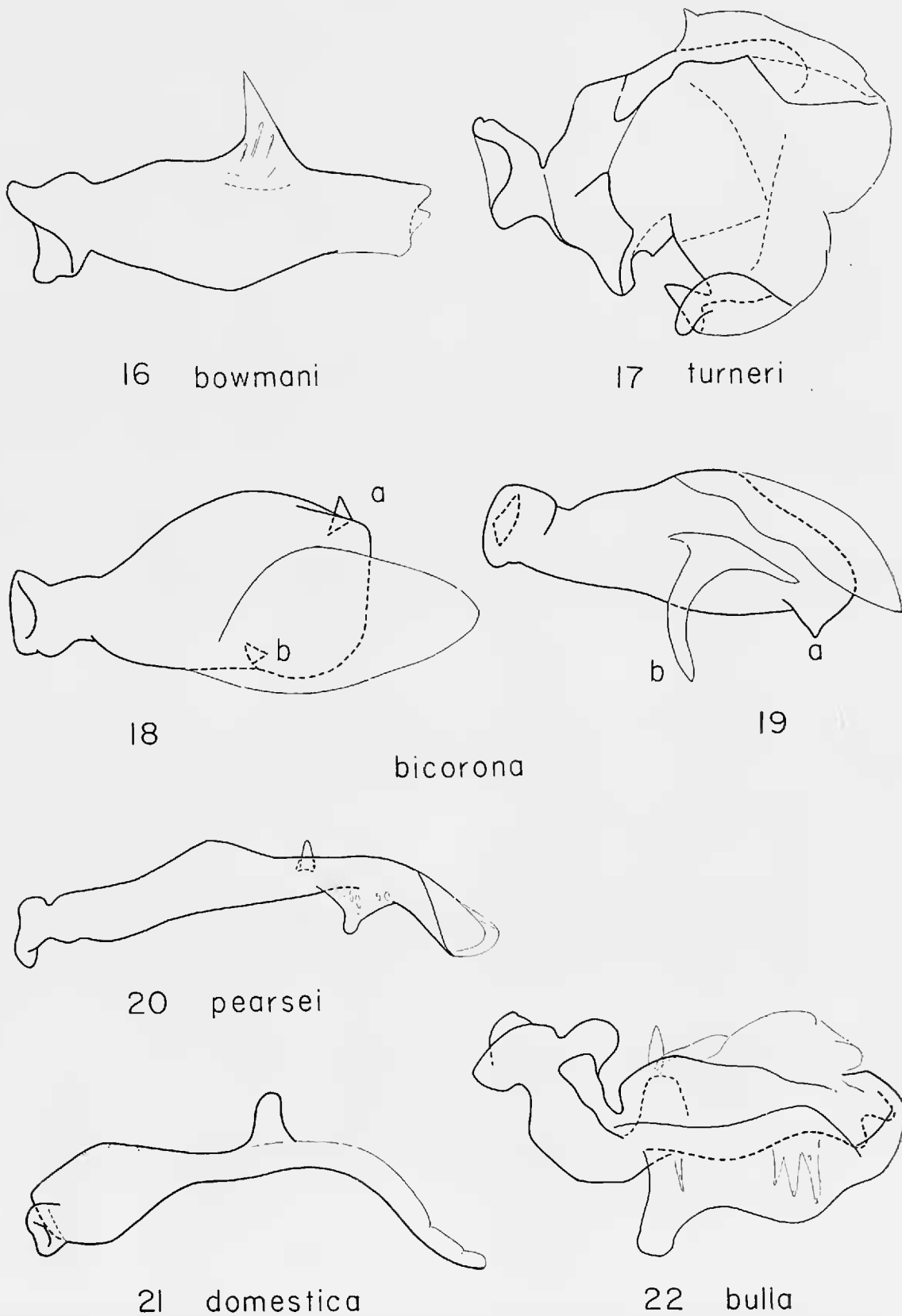
(Figs. 6, 12, 17)

Male.—Head 0.11 mm. long \times 0.11 mm. pronotum 0.13 mm. \times 0.11 mm.; elytra 0.10 mm. \times 0.12 mm.; total length 0.81 mm. In general as described for *M. bowmani*: Maxillary palpi bearing large sensory areas on third and fourth segments; tooth of left mandibular ramus triangular; mentum simple except for the 2 setae; front margin of head capsule with 1 median mark and 1 seta on each side; metatrochanter (Fig. 6) with broad inner-posterior spine. Sixth sternite is approximately 0.084 mm. long, the notch 0.027 mm. (Fig. 12). Aedeagus 0.114 mm. long \times 0.089 mm. wide (Fig. 17).

Female.—Unknown.

Holotype male was collected at MOORE COUNTY, NORTH CAR-

OLINA, May 8, 1937 by W. F. Turner from a peach orchard. Other information accompanying the specimen was "Ident.



EXPLANATION OF PLATE 2

Figs. 16-22. Aedeagi, in figs. 18, 19, the same structure is rotated 45 degrees.

37-21727" and the number "T4300." The type (USNM 64117) is deposited in the USNM.

The large sensory areas of the palpi, lack of integumental projections on the mentum and the single seta posterior to the basal-lateral angle of the mentum distinguish this species.

Mayetia bicorona Schuster, Marsh, and Park, new species

(Figs. 7, 13, 18, 19)

Male.—Head 0.12 mm. long \times 0.11 mm. wide; pronotum 0.12 mm. \times 0.09 mm.; elytra 0.10 mm. \times 0.10 mm.; total length 0.87 mm. Essentially as described for *M. bowmani*: Maxillary palpus with large sensory areas; left mandibular ramus with triangular tooth; mentum lacking integumental projections; head capsule immediately behind mentum with 2 large circular marks, 1 each side of center; 1 or 2 setae at the basal-lateral angle of the mentum; metatrochanter not modified (Fig. 7). Sixth sternite is approximately 0.046 mm. long, the notch being just over 1/5 this length (Fig. 13). Aedeagus 0.094 mm. long \times 0.46 mm. wide (Figs. 18, 19).

Female.—Unknown.

The single male (the holotype) was collected from Cecil sandy loam, WEST EDGE OF THOMASVILLE, UPSON COUNTY, GEORGIA, July 21, 1936, by W. F. Turner. The holotype (USNM 64118) is deposited in the USNM.

The configuration of the aedeagus readily separates this species from any other. It may be assumed that the female will have the same markings as the male on the anterior margin of the head capsule, and if so, this will be useful in associating the sexes.

Mayetia pearsei Schuster, Marsh, and Park, new species

(Figs. 1, 3, 4, 8, 14, 20)

Male.—Head 0.13 mm. long \times 0.13 mm. wide; pronotum 0.15 mm. \times 0.12 mm.; elytra 0.13 mm. \times 0.12 mm.; total length 1.18 mm. As in *M. bowmani*: Sensory areas of segments III and IV of maxillary palpi large (Fig. 1); left mandibular ramus with triangular tooth (Fig. 4); mentum simple except for the 2 usual setae; ventral front margin of head capsule with median circular marking and 2 setae on each side (Fig. 3); metatrochanter not modified (Fig. 8). Sixth sternite is approximately 0.067 mm. long with a small notch of about 1/5 the length (Fig. 14). Aedeagus long, thin 0.161 mm. \times 0.147 mm. (Fig. 20).

Female.—As in the male except for the distal end of the abdomen which is normal for this sex as described previously.

Holotype male was collected at DUKE FOREST, DURHAM, NORTH CAROLINA by A. S. Pearse on April 28, 1945, 2 to 5 inches deep in clay soil under oaks. Eight additional male and 15 female paratypes were collected at the same locality by A. S.

Pearse from sand and clay under pines and oaks during the months of February through August, 1945. The holotype is deposited in the Illinois Natural History Survey, paratypes in the USNM and in the collections of Orlando Park and R. O. Schuster.

The 3rd and 4th segments of the maxillary palpus of both sexes have on their lateral margins large, raised, annular developments separating this species immediately from *M. bulla* and the rounded posterior edge of the metatrochanters distinguishes this species from *M. bowmani*. At least these 3 species occur in North Carolina and will probably be found together.

Mayetia domestica Schuster, Marsh, and Park, new species

(Figs. 9, 15, 21)

Male.—Head 0.13 mm. long \times 0.13 mm. wide; pronotum 0.14 mm. \times 0.12 mm.; elytra 0.13 mm. \times 0.14 mm.; total length 1.13 mm. This species is, in general, as described for *M. bowmani*: Maxillary palpus having large annular sensory areas on segments III and IV; tooth of left mandibular ramus with triangular tooth; mentum lacking integu- anterior to each seta; the normal median circular mark with 1 long seta on each side occurs on the front ventral surface of the head capsule; metatrochanter with a small tooth midway on the inner surface (Fig. 9); sixth sternite is 0.052 mm. long, the notch 0.013 mm. (Fig. 15). Aedeagus long, thin 0.131 mm. \times 0.05 mm. (Fig. 21).

Female.—Unknown.

Holotype male (USNM 64119) was collected at DEXTER, STODDARD COUNTY, MISSOURI, September 26, 1936, by W. F. Turner. It was taken from brown silt loam in a peach orchard at Crowley Ridge, and is deposited in the USNM. An additional male considered as probably conspecific but not included in the type series differs in having a mark (setal insertion?) in addition to the seta on the head capsule behind the basal-lateral angle of the mentum and in having a slightly shorter sixth sternite. It was collected at Stoddard County, Missouri on September 25, 1936 by W. F. Turner and bears the number 1213.

This species is separated by the characters of the mentum from all other species possessing sensory areas on the third and fourth segments of the maxillary palpi.

Mayetia bulla Schuster, Marsh, and Park, new species

(Figs. 2, 10, 22)

Male.—Head 0.11 mm. long \times 0.12 mm. wide; pronotum 0.14 mm.

× 0.12 mm.; elytra 0.12 mm. × 0.15 mm.; total length approximately 1.01 mm. Essentially as described for *M. bowmani*: Lateral margins of maxillary palpi bearing small knob-like sensory developments (Fig. 2); left mandibular ramus with triangular tooth; mentum lacking integumental projections anterior to the pair of setae; front margin of head capsule with single circular marking and 2 lateral markings or setae on each side; metatrochanter not modified, the posterior edge rounded (Fig. 10). Sixth sternite is approximately 0.084 mm. long, the notch about 1/3 this distance. Aedeagus broad, complex, 0.121 mm. long × 0.071 mm. wide (Fig. 22).

Female.—As in the male except for the distal abdominal segment which is normal for this sex.

This species is known from 1 male (the holotype) collected from clay beneath pines at DUKE FOREST, DURHAM, NORTH CAROLINA by A. S. Pearse on August 18, 1945, and 1 female with the same data except that it was taken from sand beneath pines on July 14, 1945. The holotype is deposited in the Illinois Natural History Survey, the female paratype in the collection of Orlando Park.

Both sexes of *Mayetia bulla* may be separated from all known species by the knob-like sensory developments on the maxillary palpi.

KEY TO SPECIES OF UNITED STATES MAYETIA EXCLUDING CALIFORNIA

- 1 Sensory developments of maxillary palpi small knob-like structures occupying a small fraction of segments III and IV.....*M. bulla*
Sensory developments of maxillary palpi large areas about half the length of segment IV.....2
- 2(1) Mentum with 2 integumental projections anterior to a pair of setae *M. domestica*
Mentum lacking integumental projections anterior to the pair of setae 3
- 3(2) Metatrochanter with inner-posterior edge rounded..... 4
Metatrochanter with inner-posterior edge forming a 90 degree angle or developed into a spine..... 5
- 4(3) Single median circular mark occurring behind mentum.....*M. pearsei*
Two circular marks occurring behind mentum.....*M. bicorona*
- 5(3) Metatrochanter with large inner-posterior spine.....*M. turneri*
Metatrochanter roughly square in outline.....*M. bowmani*

The following localities pertain to collections of *Mayetia* from which we have seen only females. Combined with the records following the species descriptions, they show the genus *Mayetia* to be widely distributed in the United States. They also point to areas in which specimens might easily be collected

by persons interested in advancing the understanding of this group. 1. Pike County, Arkansas. 2. Mount Olive, Robertson County, Kentucky. 3. Humboldt, Coles County, Illinois (natural prairie soil). 4. Matton, Coles County, Illinois. 5. Anson and Moore Counties, North Carolina. 6. Brown County, Texas. 7. Parker Islands, 7 miles S.E. of Lake Highland County, Florida.

BIBLIOGRAPHY

COIFFAIT, H.

1955. Revision des *Mayetia* Muls. et Ray. Revue Francaise d'Entomologie. Tome XXII—Fascicule 1. p. 9–31.
1956. Deux lingees senescentes de coleopteres euedaphiques les Mayetinae (Col. Pselaphidae) et les Leptotyphlinae (Col. Staphylinidae). Vie et Milieu 7(3):400–404.

JEANNEL, R. AND H. COIFFAIT

1955. Les *Mayetia* M. et R. sont des Pselaphides. Revue Francaise d'Entomologie. Tome XXII—Fascicule 1. p. 5–8.

NEWELL, IRWIN M.

1955. An autosegregator for use in collecting soil inhabiting arthropods. Amer. Micros. Soc. Trans. 74:389–392.

PARK, ORLANDO

1947. Observations on *Batrisodes* with particular reference to the American species east of the Rocky Mountains. Bull. Chicago Acad. Sci. 8(3):45–132, pl. 1–11.
1951. Cavernicolous pselaphid beetles of Alabama and Tennessee, with observations on the taxonomy of the family. Geol. Surv. Alabama, Mus. Paper 31. p. 1–107, Figs. 1–18.
1953. Discrimination of genera of pselaphid beetles of the United States. Bull. Chicago Acad. Sci. 9(16):299–330.

A NEW SPECIES OF TRAGOSOMA FROM SOUTHEASTERN ARIZONA

(Coleoptera: Cerambycidae)

E. GORTON LINSLEY

University of California, Berkeley

The following new species of *Tragosoma* is described at this time in order that the name may be available for use in connection with biological studies to be reported elsewhere.

***Tragosoma chiricahuae* Linsley, new species**

Male. Form elongate, narrow, subparallel; integument dark brown, shining, sparsely pubescent. *Head* coarsely, confluent punctate; eyes narrowly separated by a distance about equal to pedicel of antennae; antennae attaining apical one-fourth to one-sixth of elytra, segments glabrous, opaque, apices produced externally, punctures fine, dense, elongate. *Pronotum* coarsely, irregularly punctate, disk irregularly elevated, shining, glabrous; pronotal margins thinly clothed with long, erect golden hairs, lateral spine